

REMARKS

Claims 1-13 and 15-20 are currently pending in the present application. The Examiner has:

- (1) objected to claims 6, 8, 10, 15, 17, and 18 due to some informalities;
- (2) rejected claims 2-11 under 35 USC § 112 ¶1;
- (3) rejected claims 2, 13, 15-17, and 19 under 35 USC § 112 ¶2;
- (4) rejected claims 13 and 15-17 under 35 USC § 101;
- (5) rejected claims 1 and 18 under 35 USC § 102(b); and
- (6) rejected claim 19 under 35 USC § 103(a).

Applicants have amended claims 1-4, 6, 8, 10-11, 13, and 15-20. In particular, Applicants have amended claims 6, 8, 10, 15, 17, and 18 to correct the informalities noted by the Examiner. The other claims were amended to better conform with United States patent practice. In addition, Applicants have provided a copy of the amended claims including all those now of record to clarify the present status of the claims as will be discussed below..

Applicants respectfully direct the Examiner's attention to the fact that the claims she was considering were not the claims actually of record. The claim set originally submitted with the PCT application included 20 claims. These claims were amended in response to the Written Opinion (WO), and the amended claims were appended to the IPER. Both the Response to the WO and the IPER were included with the filing papers submitted to the USPTO for this application. The Preliminary Amendment submitted with the filing papers was an amendment to the claims as amended in response to the WO, as can be verified by reference to the marked-up copy of the claims appended thereto.

On March 22, 2002, Applicants submitted to the USPTO an English translation of the specification and claims of the original PCT application. Although the translation of the description was accurate, it has now been realized that the claim set included therewith was not the claim set originally filed, in that original claim 14 had been dropped, and original claims 15-20 had been renumbered as claims 14-19. Applicants apologize for this apparent misunderstanding on the part of the individual who provided

this translation, and a correct translation of the original PCT claims is attached as Attachment C. Applicants assume that the Examiner had mistakenly applied the Preliminary Amendment to this incorrect translation of the original claims (numbered 1-19) rather than to the amended PCT claims (numbered 1-20) filed in response to the WO. One result of this amendment is that claim 18 of the claims submitted on March 22, 2002, now correctly numbered as claim 19, which is directed a ceramic product consisting of porcelain stoneware, was dropped. With the amendments submitted herewith, Applicants have corrected this inadvertent misapplication of the Preliminary Amendment, and are using a claim numbering that would have been in effect had the Preliminary Amendment been correctly applied to the claims appended to the WO.

After rectifying the regrettable error of the Applicant in the submission of the incorrect translation of the original PCT claims and the apparent oversight of the Examiner in not considering the amended claims of the PCT application, Applicants urge that claims 1-13 and 15-20, as amended, are in condition for allowance, for the reasons set forth below.

The §112 Rejections

The Examiner rejected claims 2-11 under 35 U.S.C. §112 ¶1 as containing subject matter not described in the specification. Claim 2 had been amended in response to the WO to recite that the raw materials contain microsilica and iron oxide, which are described in the specification. Reconsideration and withdrawal of these rejections are respectfully requested.

The Examiner rejected claims 2, 13, 15-17, and 19 under 35 U.S.C. §112 ¶2 for being indefinite. Claim 2 had been amended in response to the WO to recite that the raw materials contain microsilica and iron oxide, as stated above, and to eliminate the “dosing and packaging” limitation. Claims 13 and 15-17 have been amended to read as process claims. In particular, claim 16 refers to the positive step of adding the pigment, while in claim 17 it is considered appropriate to refer to the use of the pigment in surface decorations since the nature of the use should be clear. Claim 19 considered by the Examiner should have been numbered as claim 20, which depends from proper claim 19,

directed to "porcelain stoneware". Thus, Applicants urge that claims 2, 13, 15-17, as amended, and proper claim 20, are definite within the meaning of 35 U.S.C. §112 ¶ 2. Reconsideration and withdrawal of these rejections are respectfully requested.

The §101 Rejections

The Examiner rejected claims 13 and 15-17 (presumably the clean set of the preliminary amendment) under 35 U.S.C. §101. Claims 13 and 15-17 have been amended to read as process claims with active positive steps delimiting a use, as stated above. Thus, Applicants urge that these claims are now directed to a properly defined process. Reconsideration and withdrawal of these rejections are respectfully requested.

The §102 Rejections

The Examiner rejected claims 1 and 18 under 35 U.S.C. § 102(b) as being anticipated by United States Patent No.3,005,724 (Seabright), and as being anticipated by Bondioli, F., *et al.*, Mater. Res. Bull. (1998) 33(5), 723-729.

Applicant respectfully traverses these rejections.

In order for a reference to anticipate a claim under § 102, that reference must disclose every claimed limitation of the claim, either explicitly, or under the principle of inherency. As amended in response to the WO, Applicants' claim 1 is directed to a silica-iron oxide pigment composition in which the silica component is obtained from microsilica, such as that obtained as a by-product of fumes from the manufacturing process of silicon and alloys thereof. Using microsilica as a silica source for silica-iron oxide pigments solves the problem of providing said pigments at a cheaper price with a similar color and stability features than prior art pigments. Microsilica has surfaces with a low specific surface area (0.015 - 20 m²/g), a measure of the reactivity of the silica, and is relatively inexpensive as a raw material. Because microsilica is so cheap and lacking in reactivity, due to the low specific surface area of the microsilica, the pigments of the invention have a silica content range of 70-98% in order to insure iron oxide stabilization under the high temperature processes used for ceramic manufacturing.

Bondioli discloses pigments in which haematite is included in a fumed silica

matrix. Fumed silica is a pyrogenic silica obtained from silane calcination and is quite expensive. Fumed silica has a high specific surface area (300 - 400 m²/g). Moreover, Bondioli is silent as to the amount of silica present in the pigment composition, in contrast to the composition of Applicants' invention, which has a specified silica content range, as discussed above. In fact, because fumed silica is both expensive and highly reactive, the cheapest method to trap iron oxide into a silica matrix would be to use a minimum amount of fumed silica, in contrast to the composition of Applicants invention. Applicants enclose herewith as Attachment D extracts of articles published in Industrial Materials, March and April 1989, comparing the manufacturing processes for microsilica and fumed silica along with technical features of each type, of silica. The tables include a comparison of the surface area of each type of silica. Thus, fumed silica is a completely different chemical entity from that of microsilica, with a completely different origin, and with specific surface properties distinguishable from those of microsilica.

Thus, since Bondioli discloses a pigment including a silica whose source is fumed silica, not microsilica as claimed in Applicants' claim 1 and 18, and since Bondioli does not disclose Applicants' specific content range of the silica in the pigment, Bondioli does not anticipate Applicants' claims 1 and 18. Reconsideration and withdrawal of these rejections are respectfully requested.

Seabright discloses a gel process for preparing ceramic pigments wherein colloidal silica is precipitated by means of ammonium hydroxide. This is distinguishable from the pigment of Applicants' claims 1 and 18, in which the silica component is obtained from microsilica. Since the source of silica for Seabright's pigment is different from that claimed by Applicants' claims 1 and 18, Seabright does not anticipate Applicants' claims 1 and 18. Reconsideration and withdrawal of this rejection are respectfully requested.

The §103 Rejection

The Examiner rejected claim 19 under U.S.C. § 103(a) as being obvious over Seabright or, alternatively, over Bondioli.

Applicant respectfully traverses these rejections.

Claim 20, which the Examiner apparently misidentified as claim 19, ultimately depends from claim 18, and is thus patentable for the same reasons as claim 18. Reconsideration and withdrawal of this rejection are respectfully requested.

CONCLUSION

Applicants urge that claims 1-13, and 15-20, as amended, are in condition for allowance. Early and favorable action is earnestly solicited. If the Examiner believes that issues can be resolved through a telephone interview, the Examiner is urged to call the undersigned at the telephone number listed below. If the Examiner considers raising objections in a further Office Action, it is requested that such an action not be made final in view of the confusion regarding the claims as identified in the present Office Action.

Respectfully submitted,



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Attachment A

Claims showing changes

1. (Amended) Pigments of silica-iron oxide comprising a [characterized in that the] silica component (SiO_2) [is] obtained from microsilica, having a ratio of silica that ranges between 70 and 98% by weight, and a [while the] ratio of iron oxide that ranges between 2 and 30% by weight.

2. (Amended) A process for obtaining pigments of claim 1, [characterized in that it comprises] comprising the following steps:

- a) blending majority and minority raw materials[,] containing microsilica and iron oxide, respectively, to form a blend of raw materials,
- b) agglomerating [of] the [resulting] blend of raw materials [from the previous stage],
- c) calcinating in an oven the agglomerated blend [obtained in the previous stage] with a thermal cycle at temperatures [comprised] between 800 and 1300°C, with residence times ranging between 1 and 24 h, to obtain a pigment,
- d) blending the pigment to obtain a blend of pigment having particles with a particle size [obtained in the previous calcination step],
- e) reducing the particle size of the obtained blend of pigment, and
- f) final blending with control of [the] chromaticity coordinates of the [obtained] pigment[,].
- [g) Dosing and packaging.]

3. (Amended) A process according to claim 2, in which stages a) and/or b)

are [may be] carried out in dry conditions.

4. (Amended) A process according to claim 2, in which stages a) and/or b) are [may be] carried out in wet conditions.

5. (Reiterated) A process according to claim 3, in which the blend from stage a) is carried out by milling.

6. (Twice amended) A process according to claim 4, in which the mixture from stage a) is carried out by dispersion[, preferably in water].

7. (Reiterated) A process according to claim 5, in which the agglomeration of stage b) consists of a granulation.

8. (Twice amended) A process according to claim 6, in which the agglomeration of stage b) consists of drying by [5] atomization.

9. (Reiterated) A process according to claim 2, in which, before stage c) there is a prior pre-calcination step.

10. (Twice amended) A process according to claim 2, in which, after stage c), there is a cooling step, prior to blending [10] of the resulting pigment.

11. (Twice amended) A process according to claim 2, in which step e) [preferably] consists of grinding or milling.

12. (Reiterated) Pigments obtained according to the process of claim 2.

13. (Amended) A process for the manufacture of inorganic pigments and/or colorants, comprising adding [Use of] microsilica as a source of SiO₂ [in the manufacture of] to said inorganic pigments and/or colorants during manufacture thereof.

15. (Twice amended) A process [Use] according to claim 13, [characterized in 20 that] wherein the [source of] silica is obtained from condensation of gases evolved during the manufacture of silicon metal and/or alloys thereof.

16. (Twice amended) A process for the manufacture of compositions of

enamels, glasses, ceramics, cements, plastics, laminates, graphic inks or rubber, comprising adding [Use of] the pigments of claim 1, alone or in blends with other materials, as [integrants] ingredients to [in the] said compositions of enamels, glasses, ceramics, cements, plastics, laminates, graphic inks [and] or rubber.

17. (Twice Amended) A process for decorating the surface of enamels, glasses, ceramics, cements, plastics, laminates, graphic inks or rubber, comprising using [Use of] the pigments of claim 1, alone or in blends with other materials, in the surface decoration of enamels, glasses, ceramics, cements, plastics, laminates, graphic inks [and] or rubber.

18. (Twice Amended) A ceramic product [characterized in that it: includes] including in its composition the pigments of claim 1.

19. (Amended) A ceramic product in accordance with claim 18, [characterized in that it] wherein the product consists of a porcelain stoneware.

20. (Amended) A porcelain stoneware in accordance with claim 19, [characterized in that it shows] comprising chromatic coordinates (Hunter-LAB) in the following ranges: $L = 36-46$, $a = 10-18$ and $b = 7-11$, for a percentage pigment of 2% that gives a colour of red-orange tone.